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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/825,771 | 04/16/2004 | Katsuya Sakamoto | 5341-22 | 8781 |

27799 7590 12/28/2006
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| EXAMINER |
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DANIELSEN, NATHAN ANDREW

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| ART UNIT | PAPER NUMBER |
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2627

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 12/28/2006 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/825,771 | SAKAMOTO ET AL. | |
| | Examiner | Art Unit | |
| | Nathan Danielsen | 2627 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-20 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "optical intensity distribution converting element structuring a beam shaper" (see claim 11) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because it is unclear exactly what items 1-21 are (see pages 8-17). Appropriate correction is required.
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Information Disclosure Statement

6. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

7. Claims 1-20 are objected to because they contain multiple instances of incorrect English grammar, such as "the optical intensity distribution converting element is an element structuring a beam shaper" (claim 9) and "the light intensity distribution converting element is partially changeable a light intensity ratio of an outgoing light flux to an incident light flux" (claim 11). Applicant's cooperation in correcting any incorrect grammar found in all of the claims is respectfully requested.
8. Claims 5 and 6 are objected to because the limitation "one element structuring the beam expander" indicates that there may be more than one element comprising the beam expander, yet the number of elements is not specified in the claims.
9. Claim 15 is objected to because the limitation "0.65 and more" should be changed to --0.65 or more-- since individual lenses typically have only one numerical aperture value.
- Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 9 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

a. Regarding claim 9, page 30 discloses where the light intensity conversion element may be a component of the beam shaper. However, the specification as a whole does not disclose specifically how the light intensity conversion element has a beam-shaping function, especially since figure 1 shows the beam shaper (102) to be a completely different element from the beam expander (106 and 107), as well as separated by three additional optical components.

b. Regarding claim 11, page 31 suggests where "the ratio of the light intensity of the projected light flux to the incident light flux may also be locally changeable". However, the specification as a whole fails to disclose how the *light intensity distribution element* is partially changeable. For purposes of examination, claim 11 has been interpreted to mean that the light intensity distribution element is movable in an optical axis direction, as also recited in claim 5.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 2, 3, 5, and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims are rejected as being indefinite because it is unclear exactly how many light intensity distributions in nearly Gaussian distribution, light fluxes emitted by the light source, desired

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intensity distributions, light intensities of outgoing light, outermost peripheries, effective apertures, and optical axis positions Applicant intends to claim.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1-8, 10-12, 15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawa et al (US Patent 6,469,838; hereinafter Tawa), in view of Nishino et al (European Patent Application Publication 1300828; hereinafter Nishino).

Regarding claim 1, Tawa discloses an optical pickup apparatus for reproducing and/or recording information on an optical information recording medium (figure 17), comprising:

a light source to emit a light flux (figure 17), the emitted light flux having a light intensity distribution in nearly Gaussian distribution (col. 7, lines 27-43);

a light intensity distribution converting element (figure 17) to transform the light intensity distribution of the light flux emitted by the light source into a desired light intensity distribution wherein a light intensity of an outgoing light passing through an outermost periphery of an effective aperture becomes 45%-95% of a light intensity of an outgoing light passing through an optical axis position (figure 14 and col. 8, lines 49-58; where any intensity distribution between 0% and 100% at the outermost periphery may be obtained utilizing the device of Tawa); and

an objective optical element to converge a light flux emitted by the light intensity distribution converting element onto an information recording surface on the optical information recording medium (figure 17).

However, Tawa fails to disclose where the light flux has a wavelength in the range of 200-700 nm.

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In the same field of endeavor, Nishino discloses a light source that emits a wavelength in the range of 200-700 nm (§ 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a wavelength between 200 and 700 nm in an optical disc apparatus, as taught by Nishino, for the purpose of recording data at a high density (§ 7).

Regarding claim 2, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. Additionally, Tawa discloses where the optical intensity distribution converting element transforms a light intensity distribution in nearly Gaussian distribution of a light flux emitted by the light source into a desired light intensity distribution wherein a light intensity of an outgoing light passing through an outermost periphery of an effective aperture becomes 60%-80% of a light intensity of an outgoing light passing through an optical axis position (figure 14B and col. 8, lines 49-58, as explained above).

Regarding claim 3, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. Additionally, Tawa discloses where the light intensity distribution converting element satisfies the following formula:

$$1.2 < (C / D) / (B / A) < 1.5$$

where A is a light intensity of an incident light around an outermost periphery of an effective aperture, B is a light intensity of an incident light on an optical axis position, C is a light intensity of an outgoing light around an outermost periphery of an effective aperture and D is a light intensity of an outgoing light on an optical axis position (figure 14B and col. 8, lines 49-58, as explained above).

Regarding claim 4, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. Additionally, Tawa discloses where the optical intensity distribution converting element is an element structuring a beam expander (figure 17).

Regarding claims 5 and 11, Tawa, in view of Nishino, discloses everything claimed, as applied to claims 4 and 1, respectively. Additionally, Tawa suggest where one element structuring the beam expander is displaceable along an optical axis and has a spherical aberration correcting function (col. 9, lines 6-24).

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Regarding claim 6, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 4. Additionally, Tawa suggests where one element structuring the beam expander is fixed along an optical axis and has a spherical aberration correcting function (col. 9, lines 6-24).

Regarding claim 7, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 4. Additionally, Tawa discloses where the beam expander is Keplerian type (figure 16).

Regarding claim 8, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 5. Additionally, Tawa discloses where the beam expander is Galilean type (figure 18).

Regarding claim 10, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. Additionally, Tawa discloses where the light intensity distribution converting element is provided separately from the objective optical element (figure 17).

Regarding claim 12, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa fails to disclose where the beam that is expanded is first collimated.

In the same field of endeavor, Nishino discloses where a collimating element for emitting an infinite light flux in the case that a finite light flux is introduced thereto is arranged between the light source and the light intensity distribution converting element (figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed a collimator lens between the light source and the light intensity distribution converting element, as taught by Nishino, for the purpose of matching the aperture radius of the objective lens to the light flux diameter of the collimated light flux from a collimator lens (§ 55).

Regarding claim 15, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa fails to disclose where the objective optical element has a numerical aperture NA of 0.65 and more.

In the same field of endeavor, Nishino discloses where the objective optical element has a numerical aperture NA of 0.65 or more (§ 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized an objective lens having a numerical aperture greater than or equal to 0.65, as taught by Nishino, for the purpose of recording data at a high density (§ 7).

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Regarding claim 17, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa fails to disclose where the objective optical element is formed by a plastic material.

In the same field of endeavor, Nishino discloses where the objective optical element is formed by a plastic material (§ 15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the lens by a plastic material, as taught by Nishino, for the purpose of reducing costs (§ 15).

Regarding claim 18, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. Additionally, Tawa discloses where the objective optical element is formed by a glass material (col. 3, lines 62 and 63).

Regarding claim 19, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa fails to disclose where the optical pickup apparatus further comprises a chromatic aberration correcting element.

In the same field of endeavor, Nishino disclose where the optical pickup apparatus further comprises a chromatic aberration correcting element (element 7 in figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a chromatic aberration correcting element in the beam expander of Tawa, as taught by Nishino, for the purpose of correcting chromatic aberration (§ 15).

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tawa, in view of Nishino, and further in view of Nagashima et al (US Patent 6,014,361; hereinafter Nagashima).

Regarding claim 9, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa, in view of Nishino, fails to disclose where the optical intensity distribution converting element is an element structuring a beam shaper.

In the same field of endeavor, Nagashima discloses where the optical intensity distribution converting element is an element structuring a beam shaper (col. 4, lines 17-30 and figure 1).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Tawa with the beam shaper of Nagashima, for the purpose of converting an elliptical beam to a circular beam (col. 4, lines 17-30).

17. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawa, in view of Nishino, and further in view of Maruyama et al (US Patent Application Publication 2001/0028626; hereinafter Maruyama).

Regarding claims 13 and 14, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa, in view of Nishino, fails to disclose where the objective lens comprises a ring-shaped diffractive structure.

In the same field of endeavor, Maruyama discloses where an optical functional surface of the objective optical element comprises an optical path difference providing ring-shaped structure which includes ring-shaped zones around the optical axis and is structured so that the ring-shaped zones provide pre-defined optical path differences to light fluxes passing through the each ring-shaped zone between light fluxes passing through neighboring zones, wherein the optical path difference providing structure is one of a diffractive structure, a phase structure and multi-level structure (§§ 69 and 101 and figures 1 and 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the objective lens of Tawa with the diffraction structure of Maruyama, for the purpose of canceling spherical aberration in the optical system (§ 69).

18. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tawa, in view of Nishino, and further in view of Arai et al (US Patent 5,818,809; hereinafter Arai).

Regarding claim 16, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa, in view of Nishino, fails to disclose where the objective optical element is tilted to the optical axis so that a comatic aberration is corrected.

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In the same field of endeavor, Arai discloses where the objective optical element is tilted to the optical axis so that a comatic aberration is corrected (col. 7, lines 22-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have tilted the optical axis of the objective lens, as taught by Arai, for the purpose of correcting comatic aberration generated in the objective lens (col. 7, lines 22-30).

19. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tawa, in view of Nishino, and further in view of Chung et al (US Patent 6,442,124; hereinafter Chung).

Regarding claim 20, Tawa, in view of Nishino, discloses everything claimed, as applied to claim 1. However, Tawa, in view of Nishino, fails to disclose where the optical pickup apparatus further comprises a plurality of light sources and conducts information recording and/or reproducing on various optical information recording media.

In the same field of endeavor, Chung discloses where the optical pickup apparatus further comprises a plurality of light sources and conducts information recording and/or reproducing on various optical information recording media (col. 4, lines 3-16 and figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the three light sources of Chung in the apparatus of Tawa, for the purpose of recording/reproducing information on/from CDs, DVDs, and HD-DVDs (col. 2, lines 48-51 in combination with col. 1, lines 35-65).

Closing Remarks/Comments

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 8:30 AM - 4:30 PM Eastern Time.

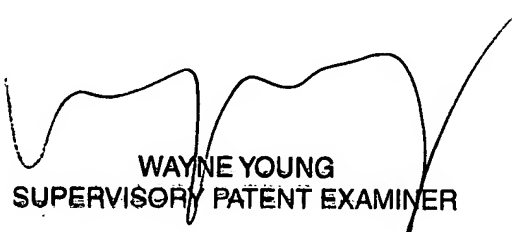
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Danielsen
12/19/2006

ND


WAYNE YOUNG
SUPERVISORY PATENT EXAMINER